

Appln. No. 09/801,602  
Amdt. dated August 4, 2005  
Reply to Office Action dated June 7, 2005

R E M A R K S / A R G U M E N T S

Reconsideration of the present application, as amended, is respectfully requested.

The June 7, 2005 Final Office Action and the Examiner's comments have been carefully considered. In response, claims 1, 2 and 13 are amended for clarification purposes, claim 12 is cancelled and remarks are set forth below in a sincere effort to place the present application in form for allowance. The amendments are supported by the application as originally filed. Therefore, no new matter is added.

Inasmuch as the present Amendment raises no new issues for consideration, and, in any event, places the present application in condition for allowance or in better condition for consideration on appeal, its entry under the provisions of 37 CFR 1.116 are respectfully requested.

PRIOR ART REJECTIONS

In the Office Action claims 1-5, 8, 9 and 11-14 are rejected under 35 USC 103 as being unpatentable over the article entitled "From Requirements to Design with Use Cases" by Regnell et al. in view of the article entitled "Requirements Management with Use Cases" by Heim. Claims 6 and 7 are rejected under 35 USC 103 as

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being unpatentable over Regnell et al. and Heim, and further in view of USP 6,366,683 (Langlotz).

In response, independent claim 1 is amended in order to clarify the relationship between the requirements object model and the use cases. Specifically, claim 1 is amended to include the subject matter of claim 12 which set forth the feature of the use cases being expressed in the terminology of the requirements object model.

Amended claim 1 is thus directed to a method for simultaneously developing a family of complex systems having a common software architecture platform which includes the steps of constructing an initial requirements object model which contains those items necessary to express what happens in complex systems and explains abstract concepts of the complex systems in terms of a structured vocabulary. An initial set of use cases, which describe interaction of users with each complex system, is formed based on the initial requirements object model such that the use cases are expressed using the structured vocabulary of the requirements object model (i.e., the terminology of the requirements object model as described in the specification at page 2, lines 19-22).

The method also includes the steps of forming an initial functional requirements specification (FRS) which includes use cases, forming an amended requirements object model based on the

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initial FRS and thus in consideration of the initial set of use cases, forming additional use cases based on analysis of the amended requirements object model, changing the FRS in light of the additional uses cases, forming another amended requirements object model based on the changed FRS simultaneously with the formation of the additional use cases, repeating the additional use case formation step, the FRS changing step and the amended requirements object model formation step until all desired use cases have been formed and considered, and obtaining a final requirements object model once all of the desired use cases have been considered.

An important aspect of the invention is the construction and amendment of the requirements object model and the formation of use cases using the structured vocabulary thereof. As to the latter feature, by expressing use cases in a defined, structured vocabulary, the process by which a family of complex systems can be developed is simplified since each complex system is reduced to common terms and phrases set forth in the structured vocabulary, these terms being in a natural language such as English. Common features of the complex systems are therefore readily apparent in view of the presence of the same terms and phrases from the vocabulary.

Amendment of the requirements object model is needed when the concepts in the existing requirements object model are

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insufficient to enable a use case to be expressed, i.e., the structured vocabulary does not express all of the concepts of a complex system. To this end, the requirements object model, i.e., the structured vocabulary, changes during the development of the uses cases until a final requirements object model is obtained and contains all of the required vocabulary to express any and all additional use cases developed for the family of complex systems.

Thus, in the invention, an amended requirements object model is formed simultaneous with the formation of additional use cases. This feature is particularly advantageous when developing a family of complex systems. Advantages include a clear and consistent functional requirements specification (see page 2, lines 19-22 of the present application) and a requirements object model which takes into account future evolution of the complex systems (see page 3, line 3-8 of the present application). In particular, since writing use cases uncovers conceptual difficulties and shortcomings of the current requirements object model, the simultaneous development of use cases and formation of the amended requirements object model occurs in consideration of such difficulties and shortcomings (see page 4, lines 16-23 of the present application). Reasons why the requirements object model would be amended are discussed at page 11, lines 14-20 of the present application. An improved final requirements object

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model is therefore formed leading to an improved final design object model.

The cited prior art does not disclose, teach or suggest a requirements object model which explains abstract concepts in terms of a structured vocabulary used for expressing use cases and which is amended simultaneous with the formation of use cases.

Regnell et al. describes a method for generating a component model using as input a list of requirements and a use case model (see Figs. 1 and 2). The use case model contains actors and use cases, which include documents, images, names and components.

In the Office Action the Examiner takes the position that the "abstract symbols of Tool for representing graphically a use case reads on interaction in terms of abstract concepts from a structured vocabulary" (Office Action, pages 2-3). The Examiner's position is respectfully traversed because the graphic representation of "Tools" for the use cases does not disclose, teach, or even suggest providing a requirements object model including a structured vocabulary to express use cases, and which is designed to be amended simultaneous with the formation of use cases.

With reference to Figs. 1 and 2 of Regnell et al. on page 5, use cases U1, U2 and U3 are represented simply as ovals connected by lines to actors A2, C2 and C3 to show interaction between the

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actors and the use cases to form a use case model. There is no mention however anywhere in the text of Regnell et al. of constructing a requirements object model which expresses concepts in terms of a structured vocabulary (commonly defined as a list of words or phrases) and amending the requirements object model simultaneous with the formation of use cases, the amendment constituting changing the structured vocabulary. The abstract, graphical representation of lines and ovals simply does not teach providing a vocabulary, i.e., a list of words or phrases, in which use cases can be expressed.

Moreover, if the Examiner considers the abstract, graphical representations in Figs. 1 and 2 of Regnell et al. to be a structured vocabulary, there is no mention of amending these representations simultaneous with the formation of use cases. By contrast, in the invention, the requirements object model which contains the vocabulary for expressing use cases, is amended simultaneous with the formation of use cases resulting in changes to the structured vocabulary.

Heim describes a requirements management process in which after a model is created, implementation of a prototype and testing are done prior to full-scale development (see Fig. 8). Instead of full-scale development, additional scenarios leading to more use cases can be developed which affect the model. In contrast to the present claimed invention however, there is no

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formation of amended requirements object models which express concepts in terms of a structured vocabulary and which are based on use cases.

In view of the foregoing, independent claim 1 is patentable over Regnell et al. and Heim when taken either singly under 35 USC 102 or in combination under 35 USC 103(a).

The other references of record do not close the gap between the present claimed invention as defined by claim 1 and Regnell et al. and Heim.

Therefore, claim 1 is patentable over all of the references of record under 35 USC 102 as well as 35 USC 103.

Claims 2-9, 11, 13 and 14 are either directly or indirectly dependent on claim 1 and are patentable over the references of record in view of their dependence on claim 1 and because the references of record do not disclose, teach or suggest each of the limitations set forth in claims 2-9, 11, 13 and 14.

\* \* \* \* \*

Entry of this Amendment under the provisions of 37 CFR 1.116, allowance of the claims and the passing of this application to issue are respectfully solicited.


If the Examiner disagrees with any of the foregoing, the Examiner is respectfully requested to point out where there is

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support for a contrary view.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,



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